

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US05/02822

A. CLASSIFICATION OF SUBJECT MATTER

IPC: H01Q 21/00(2006.01);H01Q 15/14(2006.01);H01Q 19/00(2006.01);H01Q 19/10(2006.01)

USPC: 343/844,912,833,834

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 343/844,912,833,834

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,507,322 B2 (FANG et al) 14 January 2003 (14.01.2003), whole document.	1-9,12-16
Y	US 2004/0169612 A1 (SONG et al) 2 September 2004 (02.09.2004), whole document.	1-9,12-16
Y	US 7,006,053 B2 (ZIGLER et al) 28 February 2006 (28.02.2006), column 5, lines 42-44.	10,11,17-20
A	US 7,119,744 B2 (THEOBOLD et al) 10 October 2006 (10.10.2006), whole document.	1-20

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:	"I"
"A" document defining the general state of the art which is not considered to be of particular relevance	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"A" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

22 May 2008 (22.05.2008)

Date of mailing of the international search report

03 JUN 2008

Name and mailing address of the ISA/US

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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
BRIAN KINNEAR
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 38105.8326		Date of mailing (day/month/year) 03 JUN 2008
FOR FURTHER ACTION See paragraph 2 below		
International application No. PCT/US05/02822	International filing date (day/month/year) 01 February 2005 (01.02.2005)	Priority date (day/month/year) 10 February 2004 (10.02.2004)
International Patent Classification (IPC) or both national classification and IPC IPC: H01Q 21/00(2006.01);H01Q 15/14(2006.01);H01Q 19/00(2006.01);H01Q 19/10(2006.01) USPC: 343/844,912,833,834		
Applicant BLAINE R. BATEMAN		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (571) 273-3201	Date of completion of this opinion 22 May 2008 (22.05.2008)	Authorized officer Douglas W. [Signature] Telephone No. 571-270-1268
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Form PCT/ISA/237 (cover sheet) (April 2007)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US05/02822

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
 - ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a)).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of:
 - a. type of material
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material
 - ☐ on paper
 - ☐ in electronic form
 - c. time of filing/furnishing
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in electronic form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
4. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/02822

Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 1-20 YES

Claims NONE NO

Inventive step (IS)

Claims NONE YES

Claims 1-20 NO

Industrial applicability (IA)

Claims 1-20 YES

Claims NONE NO

2. Citations and explanations:

Please See Continuation Sheet

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/02822

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

1. Claims 2-12 are objected to because of the following informalities: Applicant claims: "wireless gateway" in the preamble. In line 1 in each of claims 2-12, "wireless gateway" should be changed to "enhanced wireless access point".

2. Claim 13 is objected to because of the following informalities: Applicant claims: "means for providing an omni directional radio frequency pattern". Based off of what is disclosed in the specification, examiner interprets the claim as: "wherein the access point comprises means for providing an omni directional radio frequency pattern". Appropriate correction is required.

3. Claims 1-9, 12-16 lack an inventive step under PCT Article 33(3) as being obvious over Fang et al. (US 6,507,322, hereinafter Fang) in view of Song et al. (US 2004/0169612, hereinafter Song).

Claim 1: Fang teaches an enhanced wireless access point, comprising:

an access point (1);

at least one omni directional antenna (10).

Fang fails to teach at least one ground plane radio frequency coupled to at least one of the at least one omni directional antenna, wherein the at least one omni directional antenna functions as a directional antenna. However, Song teaches using ground plane surfaces as reflectors [0012] in order to increase the gain and directivity of an antenna [0034]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

Claim 2: Fang teaches the at least one omni directional antenna comprises a dipole (fig. 1).

Claim 3: Fang teaches the at least one omni directional antenna comprises a plurality of omni directional antennas (10, 12).

Claim 4: Fang teaches the plurality of omni directional antennas are arranged to provided diversity (col. 3/lines 8-11).

Claim 5: Fang in view of Song teach all of the limitations of claim 2, as discussed above. Fang fails to teach the at least one ground plane comprises a plurality of ground planes. However, Song teaches the at least one ground plane comprises a plurality of ground planes [0012]. For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

Claim 6: Fang in view of Song teach all of the limitations of claim 1, as discussed above. Fang teaches the at least one omni directional antenna comprises a first number ("2") of omni directional antennas (10, 12). Fang fails to teach the at least one ground plane comprises a second number of ground planes. However, Song teaches using ground planes to increase the gain and directivity (second

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US05/02822

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

number being "1"). For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize the first number of omni directional antenna is larger than the second number of ground planes (2>1).

Claim 7: Fang teaches the at least one omni directional antenna comprises two omni directional antennas (10, 12) arranged to provide diversity (col. 3/lines 8-11).

Claim 8: If the modifications to the invention of Fang were made, as discussed above for claim 7, one with ordinary skill in the art would realize the at least one ground plane comprises one ground plane associated with one of the two omni directional antennas (the radiation from the antennas are reflected by the ground plane).

Claim 9: Fang in view of Song teach all of the limitations of claim 7, as discussed above. Fang fails to teach the at least one ground plane comprises two ground planes, each ground plane associated with a respective one of the omni directional antennas. However, Song teaches the use of a plurality of ground planes [0012] in order to increase the gain and directivity. For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize the at least one ground plane comprises two ground planes, each ground plane associated with a respective one of the omni directional antennas (the radiation from the two antennas are reflected by the two ground planes).

Claim 12: If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize the at least one ground plane is placed to steer a radiation pattern associated with the at least one omni directional antenna (radiation from antennas are reflected by ground plane).

Claim 13: Fang teaches a wireless gateway, comprising:
an access point (1);
wherein the access point comprises means (10, 12) for providing an omni directional radio frequency pattern.

Fang fails to teach a means for converting the omni directional radio frequency pattern to a directional radio frequency pattern. However, Song teaches using ground plane surfaces as reflectors [0012] in order to increase the gain and directivity of an antenna [0034]. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

Claim 14: Fang teaches the means for providing is at least one omni directional antenna (10, 12).

Claim 15: Fang in view of Song teach all of the limitations of claim 13, as discussed above. Fang fails to teach the means for converting is at least one ground plane. However, Song teaches the means for converting is at least one ground plane [0012]. For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

Claim 16: Fang in view of Song teach all of the limitations of claim 13, as discussed above. Fang fails to teach the means for converting is about 1/4 wavelength from the means for providing. However, Song teaches the means for converting is about 1/4 wavelength from the means for providing [0034]. For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the reflectors of Song with the invention of Fang in order to have increased the gain and directivity of the antenna.

4. Claims 10 and 11 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of Zigler et al. (US 7,006,053, hereinafter Zigler).

Claim 10: Fang in view of Song teach all of the limitations of claim 1, as discussed above. They fail to teach at least one substrate;

The at least one ground plane is mounted on the substrate; and

The at least one substrate is releasably coupled to the access point.

However, Zigler teaches a support (907) on which is mounted a reflector (fig. 9), the support rotatably (releasably) attached to an access point (col. 5/lines 42-44). This structure allows the user to finely tune the antenna to meet new or unforeseen coverage issues (col. 4/lines 41-43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the rotatable support of Zigler with the modified invention of Fang in view of Song in order to have finely tuned the antenna.

Claim 11: Fang in view of Song teach all of the limitations of claim 1, as discussed above. Fang also teaches the access point comprises a back plane (bottom surface of access point). They fail to teach the at least one ground plane is mounted on the back plane.

However, Zigler teaches a support (907) on which is mounted a reflector (fig. 9), the support rotatably (releasably) attached to an access point (col. 5/lines 42-44). This structure allows the user to finely tune the antenna to meet new or unforeseen coverage issues (col. 4/lines 41-43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the rotatable support of Zigler with the modified invention of Fang in view of Song in order to have finely tuned the antenna.

If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize the at least one ground plane is mounted on the back plane (access point is resting on base which is connected to the support arm, where the ground plane is attached).

5. Claims 17-20 lack an inventive step under PCT Article 33(3) as being obvious over Fang in view of Song and Zigler.

Claim 17: Fang teaches a wireless gateway, comprising:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US05/02822

Supplemental Box
In case the space in any of the preceding boxes is not sufficient.

An access point (1);

The access point adapted to connect to a network (access points are adapted to connect to a networks);

The access further comprises:

A first omni directional antenna (10); and

A second omni directional antenna (12).

Fang fails to teach a bracket that comprises a first ground plane and is releasably coupled to the access point, such that when the bracket is releasably coupled to the access point, the first ground plane causes the first omni directional antenna to exhibit a first directional antenna radiation pattern. However, Song teaches using ground plane surfaces as reflectors [0012] in order to increase the gain and directivity of an antenna [0034]. Zigler teaches a support (907) on which is mounted a reflector (fig. 9), the support rotatably (releasably) attached to an access point (col. 5/lines 42-44). This structure allows the user to finely tune the antenna to meet new or unforeseen coverage issues (col. 4/lines 41-43). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Song and Zigler with the invention of Fang in order to have increased the gain and directivity as well as finely tuned the antenna.

If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize that when the bracket is releasably coupled to the access point, the first ground plane causes the first omni directional antenna to exhibit a first directional antenna radiation pattern (the radiation from the antennas are reflected by the ground plane).

Claim 18: If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize the first ground plane causes the second omni directional antenna to exhibit a directional antenna radiation pattern (the radiation from the second antenna is reflected by the first ground plane).

Claim 19: Fang in view of Song and Zigler teach all of the limitations of claim 17, as discussed above. Fang fails to teach fails to teach the bracket comprises a second ground plane and the second ground plane causes the second omni directional antenna to exhibit a section directional antenna radiation pattern. However, Song teaches the use of a plurality of ground planes [0012]. For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Song and Zigler with the invention of Fang in order to have increased the gain and directivity as well as finely tuned the antenna.

If the modifications to the invention of Fang were made, as discussed above, one with ordinary skill in the art would realize the second ground plane causes the second omni directional antenna to exhibit a section directional antenna radiation pattern (the radiation from the second antenna is reflected by the second ground plane).

Claim 20: Fang in view of Song and Zigler teach all of the limitations of claim 17, as discussed above. Fang fails to teach when the bracket is releasably coupled to the access point, the first ground plane is about $1/4$ wavelength from the first omni directional antenna. However, Song teaches the ground plane is about $1/4$ wavelength from the antenna [0034]. For the reasons discussed above, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the teachings of Song and Zigler with the invention of Fang in order to have increased the gain and directivity as well as finely tuned the antenna.

Claims 1-20 meet the criteria set out in PCT Article 33(4), and thus possess industrial applicability because the subject matter claimed can be made or used in industry such as wireless networks.